Epitomes

Important Advances in Clinical Medicine

Plastic Surgery

The Scientific Board of the California Medical Association presents the following inventory of items of progress in plastic surgery. Each item, in the judgment of a panel of knowledgeable physicians, has recently become reasonably firmly established, both as to scientific fact and important clinical significance. The items are presented in simple epitome and an authoritative reference, both to the item itself and to the subject as a whole, is generally given for those who may be unfamiliar with a particular item. The purpose is to assist busy practitioners, students, research workers or scholars to stay abreast of these items of progress in plastic surgery that have recently achieved a substantial degree of authoritative acceptance, whether in their own field of special interest or another.

The items of progress listed below were selected by the Advisory Panel to the Section on Plastic Surgery of the California Medical Association and the summaries were prepared under its direction.

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Breast Reconstruction

RECONSTRUCTION of the breast following mastectomy is becoming more common as women become more aware of surgical alternatives and as newer techniques develop. Even women with significant chest wall deformities due to radical mastectomy and radiation therapy are candidates for breast reconstruction unless other systemic disease precludes an elective surgical procedure. The type of reconstruction is contingent on the degree of chest wall deformity. Each operation must be designed for the individual patient and with the objective of obtaining symmetry.

For suitable candidates, some centers are now enthusiastic about immediate breast reconstruction using an expandable submuscular prosthesis placed at the time of mastectomy and slowly inflated. Later, after appropriate skin expansion, the prosthesis is removed and replaced with a permanent implant followed by nipple-areola reconstruction. In selected cases the implant may be placed without the use of an expander.

When the pectoralis muscles have been removed and the overlying skin is tight and scarred, additional skin and muscle are needed to create the most symmetric reconstruction. The latissimus dorsi musculocutaneous flap is an excellent choice in this situation and can produce predictably reliable results when placed over a gel-filled implant. There is considerable enthusiasm regarding a lower transverse abdominal flap based on the rectus abdominis muscle, which allows for successful breast reconstruction using autogenous tissue and avoids the need for an implant. The donor site incision usually closes similarly to that of an abdominoplasty and results in a tighter and trimmer abdominal wall and a soft and symmetric reconstructed breast.

After an adequate breast mound has been created, one can reconstruct the nipple-areola complex using a variety of tissues. In the usual reconstructive procedure the pigmented skin on the medial aspect of the thigh is used for the areola, and a shared portion of the opposite nipple or earlobe is used to reconstruct the nipple.

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Limb Salvage

LIMB SALVAGE, now a well-recognized technical feat, must be measured against the useful function restored and that which can be provided by a prosthesis. In the upper extremity restoration of sensate key pinch, chuck pinch and tubular grasp are the primary objectives, in that order. In the lower extremity restoration of functional gait with a sensate foot is the sole objective. Lower extremity length is of prime importance, but a useful upper extremity may be many centimeters shorter than a normal one. High amputations should only be replanted under the most ideal conditions in the arm and almost never in the lower extremity. Protective sensation on the sole of the foot and useful sensation on the hand will take up to two years or more to develop. It may never occur if there has been a traction injury to the proximal nerves, plexes or nerve roots.

Neurotrophic ulcers or injuries to the replanted part are a constant problem during this recovery phase.

The massive amount of muscle tissue present in high amputations is extremely vulnerable to ischemia and replantation of the part may result in life-threatening complications when the circulation is reestablished. Time is of the essence in all major limb replants. Immediate arterial and venous shunts should be inserted to shorten this critical period of ischemia before bone stabilization or any soft-tissue repair.

The most common extremity salvage situation exists when there has been a severe compound comminuted lower extremity fracture with extensive soft-tissue injury. Exposed bones, joints and tendons with or without metal plates and rods must be covered by vascularized tissue. The use of proximally and distally based muscle and myocutaneous flaps often leads to further tissue loss in an already severely traumatized extremity. Wound cover can best be achieved by microvascular transplantation of muscle, with the vascular supply anastomosed to untraumatized proximal vessels. These pliable muscle structures can be wrapped around and folded into defects, obliterating dead space and bringing in needed blood supply. Ideally these transplants should be done as primary or delayed primary operations. If reconstruction is delayed for several weeks, severe problems with acute and chronic osteomyelitis are encountered. When wound closure and control of infection have been achieved, then secondary vascularized bone grafts and other procedures can be undertaken. None of these operations are indicated if the nerve supply to the sole of the foot has been destroyed.

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Craniofacial Surgery

WHILE THE comprehensive care of rare and highly complex congenital craniofacial anomalies has been left to a few centers, the application of craniofacial surgical principles and techniques has become widespread.

The classic use of autogenous iliac and costal bone grafts to repair the facial skeleton has been largely replaced by the use of cranial bone grafts. The outer table and the diploë can be safely harvested as a split graft. Aside from its use in craniofacial surgical procedures, it has been applied to correct saddle-nose deformities, erase alveolar clefts in children with cleft palate, repair orbital floor fractures and restore the contour of cranial defects. Resorption of the graft is minimal. Donor site pain and morbidity, when compared with that of the ilium and rib cage, are greatly reduced, as is the hospital stay.

In cases of severe maxillofacial trauma, the availability of computed tomographic scanning, immediate bone grafting and direct exposure and fixation of the fractures have improved the end results and lessened the need for secondary reconstruction. Difficult late residual problems such as enophthalmos can also be corrected by using craniofacial surgical approaches and techniques.

Parts of the facial skeleton are frequently electively moved to improve form and function. In conjunction with an orthodontist, difficult skeletal bite deformities can be corrected by simple procedures. Both jaws can safely be simultaneously repositioned to bring about dramatic changes.

Working as a team, plastic surgeons and neurosurgeons have augmented the time-honored stripping of craniosynostosis by repositioning the deformed bones in early infancy. The deleterious late deformity is thus lessened. In an older age group, treatment of a disfiguring craniofacial malformation has been simplified and the operating time drastically reduced, hence decreasing the morbidity and mortality of the procedure.

Thus, while the refinement in craniofacial procedures continues in selected centers, the spin-off of techniques enjoys wide application to the entire specialty of plastic surgery.

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Recent Advances in Ear Reconstruction

RECONSTRUCTION OF THE EAR for microtia, traumatic loss or burn sequelae has, until recently, rarely resembled the natural color and contour of a normal ear. After undergoing numerous procedures, patients were often left with noticeably deformed, scar-encased auricular facsimiles. Silicone frameworks have been disappointing as they have an unacceptably high incidence of eventual exposure, infection and extrusion.

In virgin microtia, skin coverage is usually not a problem. Brent has shown that precision sculpting of autogenous rib cartilage with exaggeration of natural prominences produces excellent contours. Proper projection can be obtained by a supportive postauricular cartilage block. A deep posterior sulcus is not reconstructed.

For posttraumatic losses or extensively scarred, failed previous surgical procedures, the temporoparietal fascia used as a vascularized flap affords the greatest opportunity for an aesthetic reconstruction. The old scar is totally resected and the carved rib cartilage is inset. The temporoparietal fascia is then